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Nesting of the Fulvous Tree Duck.

BY A. M. SHIELDS, SAN FRANCISCO.

[Read before the Northern Division of the Cooper Orn. Club, Jan. 7, 1899.]

WHILE the Fulvous Tree Duck (*Dendrocygna fulva* Gmel.) is well known to nearly, if not all, our leading authorities and has been made the subject of extended notes by some,—notably Baird, Brewer and Ridgway, very little has been known of its nesting habits. I have made a special study of our Duck family and have personally taken sets of eggs of eight species, but it was not until June of this year (1898) that I had the good fortune to discover the nest of *D. fulva*, and as is the rule with desirable oölogical finds, my "take" was quite unexpected.

Mr. Brewer states in his notes that this duck occasionally visits the Island of Trinidad (at intervals of several years) and while on the island raises its young, several broods sometimes being raised during a season, but he is apparently unable to definitely state whether the bird nests upon the ground or in hollow trees as does its black-breasted congener. Col. Grayson discovered this duck in the vicinity of Sonora, Mexico, where it was fairly abundant during the breeding season. He was informed by natives of its nesting in that locality though he omitted to state other than that "the birds were said to lay from 12 to 15 pure white eggs."

My impression is that this bird is among the most variable and cosmopolitan in its nesting habits of any of our ducks. While in the central part of the state during the early part of last June, I was collecting in an immense tule swamp containing a rookery of White-faced Glossy Ibis and Black-crowned Night Herons when I was surprised at seeing a large number of Fulvous Tree Ducks throughout the swamp. The birds were either in pairs or multiples of pairs, and although the sexes are usually so similar as to make identification at a little distance impossible, I could, on this occasion, readily locate the females by the fullness of the abdomen. The ducks were much interested in our movements, frequently circling around close to us and indicating their displeas-

ure by continually uttering their peculiar whistle. As these actions were suggestive, my assistants and myself forsook the Ibis rookery and commenced a systematic search among the tules for possible nests of *D. fulva*. After a vain search of several hours we decided that it was either too early or else the birds were not nesting there.

June 25 found us again on the ground, the first pleasant observation being that instead of pairs, many single ducks (presumably old drakes) were scattered here and there; also that when a small group of birds were seen it was as likely to contain three or five ducks as two or four, all this indicating nests and setting birds—somewhere. We were not long in again penetrating the dense tules where we searched diligently for hours, but about the only nests found were dozens of the White-faced Glossy Ibis, which, at this time, nearly all contained four little jet black balls of down. Here I would mention the apparent apathy of the old Ibis' toward their young; the very instant we approached the nest the old bird would rise into the air and off she would go a mile or more to a feeding ground and frequently not appear while we were in the vicinity. A few weeks before, while collecting Ibis eggs, the parent birds continually hovered overhead or near-by and as soon as we were a few yards from a nest just robbed, the old bird would settle down on its edge and there remain in silence until lost to view among the thick rushes.

After a while I flushed a Redhead from her floating palace of dry tules and down, the nest containing 15 eggs which I soon discovered were not all alike. Twelve were undoubtedly those of the Redhead but three were different from anything I had ever seen and were slightly smaller, opaque, slightly pyriform and of a chalky appearance when compared with those of the Redhead. I instinctively decided that these three strange eggs were those of the Fulvous Tree Duck. Shortly after this

one of my assistants found a floating nest containing six large white eggs and one small one; the nest and its six large coarse-grained eggs I at once identified as those of the Ruddy Duck, while the seventh resembled the three strange eggs of the Redhead's nest. To make a long story short we found six or eight nests of the Redhead and Ruddy Ducks and over half of them contained one or more of the strange eggs, but search the tules as we might not a single nest of the Fulvous Tree Duck could we find. This was unaccountable for the birds were certainly laying and the parasite eggs were theirs, and I found myself wondering if it were not probable that the birds being accustomed to nest in hollow trees, and not having such facilities at hand, had abandoned the idea of having nests of their own and adopted the method of the Cowbird in rearing its young.

As the afternoon was advanced we gave up for the day and remained over night at a farm-house a few miles from the swamp. Starting early next morning to search a different locality, the place selected was an extensive strip of high grass growing in the damp swampy ground and sometimes in several inches of water. The grass was from two to three feet high, of a variety commonly known as "sword" or "wire" grass and covered an area of perhaps one hundred acres of low land between the deep water and the higher ground a few hundred yards back. Just as we were alighting from the wagon on the edge of the swampy area I saw a Fulvous Tree Duck flying from the swamp. After a few circles she dropped down among the dense grass not 300 yards distant, and I, not stopping to put on my wading boots but keeping my eye on the spot where she had settled, quickly approached and when within a few yards I was delightfully shocked by a flutter of wings and the sight of the old bird rising and winging a hasty retreat. I reached the nest and what a thrill at the sight,—there in the midst of a little vacant square of four or five feet was a beautifully built nest, composed entirely of grass, about six inches in height and containing 19 beautiful white eggs! I immediately saw by comparison that

my surmise as to the identity of the strange parasite eggs found the day before was correct.

The nest was situated in the center of a little open spot in the grass; the open area had evidently been created by the bird in her quest for building material, for she had proceeded to pull up or break off the grass immediately adjacent as her nest grew higher and larger, until the nest finally occupied a position in broad daylight as it were, although it is not improbable that when the spot was selected it was well hidden by overhanging and surrounding grass. I was not long in securing this nest and eggs, after which we began a systematic search through the high grass and in a short time I had found my second nest constructed similarly to the first but a little better hidden, being under an overhanging bunch of grass which furnished a slight covering. This nest contained *thirty* eggs, deposited in a double layer, and if the first set of nineteen was a surprise what shall I say of this?

We subsequently found about a dozen nests, all similarly situated and most of them containing from 17 to 28, 30, 31 and 32 eggs. The smallest set found was of nine and another of eleven eggs, both evidently being incomplete as the nests were not finished and incubation had not commenced. There are but two ways in which to account for the remarkable number of eggs in the sets; either the Fulvous Tree Duck possesses greater fecundity and is much more prolific than any other known wild duck, or several females frequently occupy the same nest. As to which of the above theories is correct, and whether their habits in this respect differ in this country from those in more southern climes, I am of course unable to state. While I am inclined to the belief that one duck generally contributed the entire quota of the large sets, yet the contrary would not surprise me, as the very fact of their depositing eggs at random in nests of other species demonstrates their "easy conscience" in such practices.

The nests were in main constructed of wire grass and sparsely lined with down and feathers; the eggs were invariably

deposited in two layers and are of a pure white color, and as compared with the eggs of other ducks, possess a rather rough shell, sometimes even approaching a chalky appearance and being frequently slightly pyriform in shape. The measurements vary from 1.35x1.98 to 1.65x2.20 inches, the majority of eggs being a mean average of these extremes. The eggs partake of the characteristics of both those of the goose and duck, but this is not remarkable when it is remembered that the Tree Ducks constitute a family supposed by some to have originated ages ago from the hybridization of the goose and duck. They are equally at home in an alfalfa patch (about dusk) or in a lake of water, and are entirely at home in an oak forest not far from the breeding swamp, where they are said to assemble for the purpose of feeding on acorns.

I regretted my inability to visit the breeding site of these birds a month or two later in order to study their life history, but feel assured that immediately upon the young birds being able to fly, the parents assemble their clans

and depart at once for their southern home, as I have never seen *D. fulva* in California later than September, after which they are entirely absent from our shores until the following spring when they return in limited numbers. That well known ornithologist, Mr. W. Otto Emerson, of Haywards, has kindly favored me with his notes on this species which would indicate that the birds also nest in trees in this state, from all of which we may consider *D. fulva* a strange bird in more ways than one—equally at home on land or water and wholly unbiased in its nesting sites and feeding grounds. Mr. Emerson's notes are as follows: "On May 23, 1882, while collecting with Wm. C. Flint at Lillie's ranch near Tulare Lake I noticed a Fulvous Tree Duck sitting in the entrance hole of a large white oak near one of the ditches, but it was out of the question to reach it. Again on May 26 another was located sitting on the edge of a hole high up in a white oak. Lillie's ranch is nine miles from Wildflower, Tulare Co. and four or five miles southeast of the lake."

A New Race of the Brown Towhee.

BY RICHARD C. MCGREGOR.

Pipilo fuscus carolæ,¹ subsp. nov. NORTHERN BROWN TOWHEE.

Closely related to *P. f. crissalis* but distinguished by grayer and more uniform color of upper parts, much paler throat patch and slightly longer tail.

Type, ad. male (No. 2200, Coll. R. C. McG; Battle Creek, California, Nov. 7, 1898). Wing, 4.01; tail, 4.49; tarsus, 1.03; exposed culmen, .62.

The characters assigned to this form are seen at a glance, while a comparison of a series from Battle Creek with birds from the central part of California, show the under parts to be slightly paler and clearer in the northern bird. The only specimen in my collection which approaches *carolæ* is a skin from San Geronimo. Four young birds from Redding, taken in August, and one from Battle Creek in October, are very much like young examples from Santa Cruz.

AVERAGE MEASUREMENTS TAKEN FROM SIX EXAMPLES OF EACH FORM.

	Wing.	Tail.	Tarsus.	Exposed Culmen.
<i>P. f. crissalis</i>	3.76	4.32	1.08	.56
<i>P. f. carolæ</i>	3.76	4.41	1.03	.59

Fifty-five skins have been examined from the following localities: San Geronimo, 3, St. Helena, 4, Palo Alto, 20, San Jose, 1, Livermore, 1, Gilroy, 1, Banta, 1, Ione, 1, Morgan Hill, 1, Santa Cruz, 2, Placerville, 1, Drytown, 3, Ukiah, 2, Cahto, 3, Redding, 4, Battle Creek, 7.

Battle Creek, the type locality, forms the boundary line between Tehama and Shasta Counties. My towhees were collected on either side of the creek, less than two miles from the Sacramento River. Ball's Ferry is the nearest post-office.

1. Named for Charlotte C. McGregor.